Rational. software

IBM

IBM Rational Rhapsody Developer

Highlights

- ***Provides a model-driven development environment for embedded and real-time systems and software***
- ***Harmonizes systems engineering and software development with UML and SysML modeling***
- ***Generates C, C++, Java and Ada applications, including architectural and behavioral views***
- ***Provides model-level debugging via model execution, which highlights state charts and generates real-time sequence diagrams during execution on host or target***
- ***Includes a robust set of modeling and requirements traceability capabilities to help ensure effective software delivery***
- ***Integrates with industry-leading IDEs and real-time operating systems***

Today's discerning consumers demand advanced products featuring the latest technology. To meet these demands and thrive in a highly competitive marketplace, companies must deliver innovative, high-quality products quickly. However, shrinking design cycles, increased design complexity, limited numbers of resources and geographically and temporally distributed development teams have created a challenging design environment.

The IBM Rational® Rhapsody® Developer development environment provides a model-driven development (MDD) environment for embedded and real-time software that can help you automate the software development process, promote asset reuse, optimize team collaboration and identify defects and design errors early in the development lifecycle—when they're less costly to fix. It's designed to help you deliver the innovative and high-quality products today's consumers want.

Providing a flexible workflow via automated code development and model-driven testing

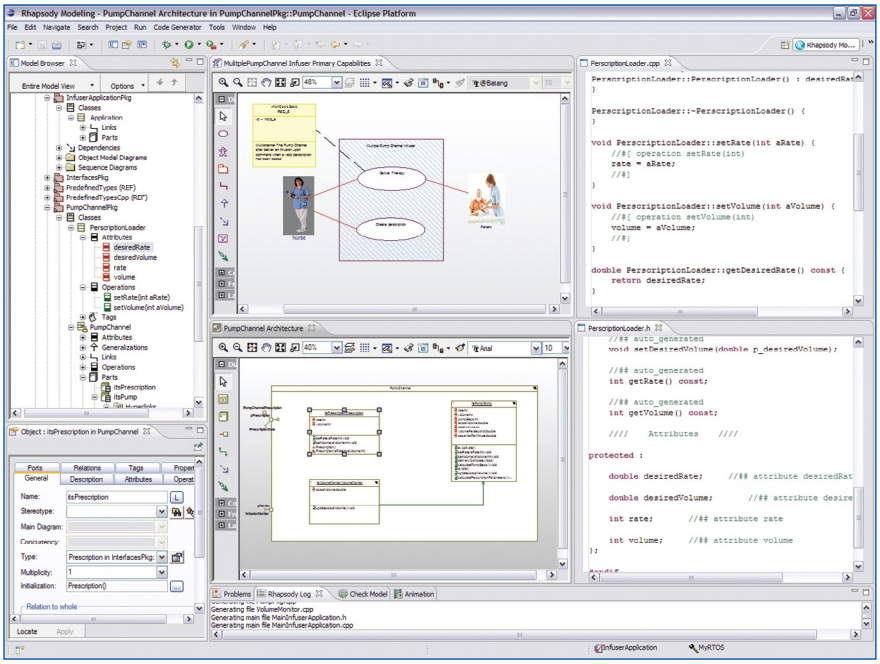
The Rational Rhapsody Developer environment provides an extensible MDD environment based on the Unified Modeling Language (UML) and Systems Modeling Language (SysML). It helps you to automate code development by targeting leading real-time operating systems. There are three different editions of the Rational Rhapsody Developer environment to choose from, based on your target language:

- *Rational Rhapsody Developer environment generates code for the C, C++, Java™ and Ada languages, including architectural and behavioral views.*
- *Rational Rhapsody Developer for C++, C and Java environment is designed for users not interested in the Ada language.*
- *Rational Rhapsody Developer for Ada environment is designed for users only interested in the Ada language.*

Each edition synchronizes changes to the code and the model, enabling a more flexible workflow that helps developers work in the way they feel most comfortable. All editions support early design validation through model-driven testing, promote team collaboration with requirements visualization and automate generation of documentation that is synchronized with implementation.

The Rational Rhapsody Developer for C++, C and Java environment plugs into the Eclipse integrated development environment (IDE), enabling developers to leverage the benefits of MDD and code development within a single, integrated environment. Through this integration, developers can take advantage of graphical abstraction, design-level debugging, automated documentation creation and Eclipse code-editing capabilities within the popular Eclipse development environment they may already be using. The Rational Rhapsody Developer environment helps developers generate production-ready code and supports design consistency through modeling functionality.

It works with a variety of file types and models, so you can import and export XML Metadata Interchange (XMI);* import and export Automotive Open System Architecture (AUTOSAR) XML, and capture AUTOSAR system models using AUTOSAR terminology; and import, execute and validate IBM Rational Rose® models.*



The Rational Rhapsody Developer environment can help enhance productivity by enabling you to develop software at the model or code level—while keeping models and code synchronized.

Improving code quality with comprehensive modeling and requirements traceability capabilities

The Rational Rhapsody Developer environment delivers a robust set of modeling and requirements traceability capabilities to help you improve code quality and help ensure you're delivering products that meet your customers' requirements. It provides:

- *Model verification, simulation and execution capabilities.*
- *Static model checking that allows you to verify that models are complete and consistent.*
- *Support for functional, object-based or object-oriented paradigms.*
- *Integrated requirements modeling to help ensure the design meets the requirements.*
- *The ability to integrate external code with the modeling environment.*
- *Domain-specific language support for graphical C, AUTOSAR and Modeling and Analysis of Real-Time and Embedded (MARTE) systems.*
- *Automatic diagram creation that enables you to visualize your existing code.*

Boosting productivity with application generation capabilities

The Rational Rhapsody Developer environment generates C, C++, Java and Ada applications, including architectural and behavioral views, enabling you to automate manual coding tasks and boost productivity. Key application generation capabilities include:

- *Automatic visualization of external code—without the need for modifications—for integration into the model and documentation.*
- *Reverse-engineering capabilities that can help you add existing code into your model with diagrams that enhance your understanding of code architecture and behavior.*
- *Automated builds for multiple components at the same time.*
- *Automatic generation of pointer initialization code that can help prevent crashes.*
- *Customizable code generation that meets industry and company standards via the IBM Rational Rhapsody Developer Rules Composer Add On feature.*

Promoting team collaboration with requirements visualization

Collaboration is a key to keeping projects on track. Rational Rhapsody Developer environment provides key collaboration capabilities to help keep your teams in sync, including:

- *Base-aware graphical differencing and merging to manage parallel development.*
- *Customizable documentation generation to help meet project requirements.**
- *Tables and matrices that can help you organize and communicate large amounts of information.*
- *References to reusable components that help minimize rework in large application development environments.*
- *Command-line code generation for integration into the build process.*
- *Configuration management capabilities* that include enhanced integration with IBM Rational ClearCase® and IBM Rational Synergy software.*
- *Real-time collaboration via integration with IBM Rational Team Concert™ software.*

Identifying defects and design errors early in the development lifecycle

Defects become more costly to fix as software development progresses. That's why it's essential to find defects as early as possible. Rational Rhapsody Developer environment includes key testing capabilities, such as:

- *Model-driven testing that helps you find and eliminate errors earlier in the development process.*
- *Model simulation to animate state charts and create sequence diagrams during execution.*
- *Execution early on host to help reduce dependency on target availability.*
- *The ability to create demonstrations visualizing behavior for management and customers.*
- *Requirements-based testing through the IBM Rational Rhapsody TestConductor Add On feature, which provides a highly automated unit and regression test environment, UML diagrams to drive and monitor test results, and automated reports on test coverage for design reviews.*
- *Model-driven automated test generation with the IBM Rational Rhapsody Automatic Test Generation Add On feature to expand test coverage.*

Enabling you to use the right tools for your environment

Rational Rhapsody Developer environment can be integrated with industry-leading IDEs and real-time operating systems (RTOSs). You can select from Eclipse C/C++ development tools and Java development tools, as well as third-party IDEs—giving you the ability to use the best tools for your particular environment. In addition, Rational Rhapsody Developer environment can be customized to work in the RTOS of your choice or even without an operating system.†

Extending functionality with add-ons for the Rational Rhapsody Developer environment

You can gain additional functionality from Rational Rhapsody Developer environment using a number of add-ons, including:

IBM Rational Rhapsody Interfaces Add On software, which includes the MathWorks Simulink interface and the configuration management (CM) interface for collaborative development applications including IBM Rational ClearCase, Rational Synergy, IBM Rational Rose Importer, IBM Rational SDL Suite, IBM Rational Statemate® and IBM Rational System Architect® software.

IBM Rational Rhapsody Tools and Utilities Add On software, which includes a highly customizable template-based documentation utility plus graphical panels for rapid prototyping and debugging. Using interface mockups and Webify software, you can create a rapid prototyper/model stimulator that can be built as a Web server into your application.

IBM Rational Rhapsody Gateway Add On software, which includes an advanced interface to requirements management tools, such as IBM Rational DOORS® and IBM Rational RequisitePro® software, along with popular requirements authoring tools.

IBM Rational Rhapsody TestConductor Add On software, which enables you to improve test productivity and find defects earlier. You can define tests either with code or graphically with sequence diagrams, state charts, activity diagrams and flowcharts. And you can automate tedious testing tasks and execute tests interactively or in batch mode.

IBM Rational Rhapsody Automatic Test Generation Add On software, which includes automatic test generation for the Rational Rhapsody model, helping to facilitate greater test coverage.

IBM Rational Rhapsody for DoDAF, MODAF, and UPDM Add On software, which enables you to create Department of Defense Architecture Framework (DoDAF), British Ministry of Defence Architectural Framework (MODAF) and Unified Profile for DoDAF/MODAF (UPDM) artifacts.

IBM Rational Rhapsody Developer Rules Composer Add On software, which provides customizable rules for code generation to meet the standards of or to generate other programming languages not currently supported.

For more information

To learn more about IBM Rational Rhapsody Developer environment and the wide selection of add-ons available, contact your IBM representative or IBM Business Partner, or visit:

ibm.com/software/rational/products/rhapsody/developer

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* These capabilities are delivered via optional add-ons.

† For the most up-to-date list of target operating system adapters along with version information, please see the Readme files for the Rational Rhapsody Developer environment found at http://publib.boulder.ibm.com/infocenter/rsdp/v1r0m0/index.jsp. Additional adapters can be obtained by contacting IBM support.

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